

Examining the Predictive Power of the ACT and High School GPA

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Introduction

American higher education has struggled constantly with questions of access. In part because it is a public endeavor using public money and also because it seeks to provide educational opportuni

brightest and most able. "The radical reinterpretation of the public sector as a sphere solely for individual competition ... is unjustified in institutions that we have traditionally defined as vehicles for upward mobility for all people, not merely the privileged few."²

Even if public higher education desired to admit only those students who were determined to possess the most merit, how is the notion of a student's merit determined? What instruments are employed to measure "merit" and who gets to decide what instruments to use? That these questions are to any great extent objective is a tough point to argue for passionately. Over the last century, standardized tests - namely the ACT and the SAT - became the yardstick higher education used often times emphatically to brand each member of an applicant pool with a determination of intelligence, as if four hours on a Saturday became a perpetual proxy for a person's aptitude. Americans have become obsessed with merit and have taken an intense liking to measuring intelligence based on scores on tests that purposefully measure potential to achieve rather than achievement itself. As Sacks (1997) observed, "For most Americans a 'gifted' student is one who scores off the charts on aptitude tests, not one who demonstrates advanced practical knowledge on worthwhile endeavors. [T]he notion that merit and achievement equal high test scores ... is repeated constantly in popular culture."³

The historical necessity of affirmative action is an easily understood topic, though one far from being free of controversy. Affirmative action programs in college admissions have sought to provide educational opportunities to those citizens who have historically been denied such opportunities and who suffer from the vestiges of institutional discrimination today which possibly truncated equal access to education.

² Tierney, p. 192.

³ Sacks, P. (1997). Standardized testing. Meritocracy's crooked yardstick. *Change*, 29(2), 25-31.

Affirmative action, by its very definition, does not purport to be race blind, as many argue that society should be. Rather it identifies groups and provides them with tools that assist them in their pursuit of American ideals: education, happiness and such.

Defenders of affirmative action in higher education have focused on three justifications for the use of affirmative action admissions policies: compensation or redress for past wrongs, correction or overcoming historical levels of undereducated minorities, and diversification or ensuring that a critical mass of minorities exists on a college campus sufficient enough to provide for diversity of viewpoints which theoretically improves all students' educational experiences. Courts have tended to reject all but diversity as justifications for affirmative action admissions policies.⁴ Yet, even diversity as a justification has drawn the skepticism of courts such as in Texas and Michigan. Supporters of the diversity reasoning walk dangerously close to an obvious and equally debilitating conclusion when diversity of race is automatically equated with diversity of viewpoint and creed. Diversity has, however, been a component of the educational experience that has been shown to affect positively student satisfaction with the overall college experience and student life.⁵

Higher education admission officials are understandably leery of any policy that might undermine their pursuit of a racially diverse student body. Therefore, admissions policies are examined for procedures that might unfairly disadvantage a particular group. If certain racial groups respond differently to admission procedures such as standardized test cutoffs thereby causing the university to fall short of its optimum racial makeup at the school, then the university is likely to reexamine those procedures and reevaluate

⁴ For a thorough review of the legal landscape for affirmative action admission policies, see Rosenblum (2001).

their fairness and effectiveness. However, universities must balance this quest for diversity with meritocracy and the goal to bring in the most academically able students.

That goal has most often been pursued by evaluating students on standardized test scores and high school record. Intense debate has swollen lately over whether or not it is prudent for colleges and universities to consider standardized test scores in college admission decisions. Detractors of such tests have a two pronged argument against their utility. On one hand they claim the tests are in some manner culturally biased against minorities which unfairly penalizes them when used by college officials to determine admission status. The second argument is that the tests are a poor predictor of college success and therefore should not be used as a basis for granting anyone admission to college. Proponents argue that the tests are the only common indicator by which to judge potential applicants and provide for an equalizing tool to counteract the effects of a vastly divergent pool quality among high schools. Because of the recent push by Richard C. Atkinson, the president of the University of California system, to abolish the use of the SAT in admissions, the issue of the use of standardized tests in admissions decisions has once again moved to the forefront of higher education's collective conscience.

Diversity and meritocracy clash here as proponents of standardized tests generally believe that affirmative action, whose programs would not place as much emphasis on the tests as high school record, dilutes the quality of the student body and brings unqualified people into the academy. Their fear is that any compromise of merit is harmful to the health of the university. The assumption is that standardized tests are an indicator of merit, a reasonable assumption, but one that begs the question of what type of merit

⁵ Astin, A. (1993). What matters in college? Four critical years revisited. San Francisco, CA: Jossey-Bass.

should the university should be concerned with and does that measure of merit predict future college performance.

If affirmative action opponents are able to do away with standardized tests what effect would that have on admissions and the makeup of a student body? Would the idea of merit be abandoned in favor of diversity? Would reliance on the high school record and other factors trigger a new cadre of students who are offered admission, thereby altering the makeup of a student body? Proponents of standardized tests have a two front war to fight. Admission policies that utilize the tests are under attack from affirmative action proponents who want a greater representation of minorities in higher education. Because minorities typically score lower as a group than white students on the tests,⁶ they believe that over reliance on the tests excludes a disproportionately high number of minorities. Proponents of standardized tests must also battle the notion that the tests do not accurately measure real and useful notions of merit.

Tennessee public higher education has struggled with the proper balance between social responsibility and meritocracy since the commencement of the *Geier v. Sundquist* desegregation lawsuit in 1968, which eventually merged the University of Tennessee, Nashville and Tennessee St. University (TSU). A Federal Court monitored a Stipulation of Settlement between the two parties, signed in 1984, that set affirmative action goals for Tennessee's public higher education institutions. Though no specific quotas were enforced, public universities were expected to work to achieve race targets that sought to balance the racial makeup of Tennessee higher education which had settled, whether through the vestiges of a dual system of higher education or citizen choice, into

⁶ Camara, W.J. & Schmidt, A.E. (1999). Group differences in standardized testing and social stratification. College Board Report No. 99-5, New York.

predominantly black TSU and eight other predominantly white institutions.⁷ The courts had effectively warned Tennessee public higher education that it had constitutionally breached its social responsibility to dismantle its dual system of higher education.

Thus, Tennessee had been forced to address the balance between diversity, social responsibility and meritocracy. Because the courts objected to the racial makeup of their student bodies, Tennessee public higher education institutions could no longer fashion admissions policies that were not adequately based on the need to increase the level of diversity. Strict standardized test score and GPA requirements that would impact different races in different ways, were effectively no longer permissible because in Tennessee as in the nation at large, minorities scored lower on the ACT and SAT on average than white students. The following table shows historical trends in average ACT scores among whites and blacks in Tennessee.⁸

Table A

Year	Black	White	All Graduates
1996	16.6	20.7	19.9
1997	16.4	20.6	19.7
1998	16.4	20.6	19.8
1999	16.5	20.7	19.9
2000	16.4	20.8	20.0

Admissions policies are inextricably linked to current debates surrounding the use and effectiveness of standardized tests and affirmative action programs. Creating a balance between meritocracy, diversity and higher education's social responsibility speaks directly to the heart of what role public higher education serves in contemporary

⁷ Noland, B. (2001). "The Fruits of Judicial Decision: An Analysis of Geier v. Sundquist." Unpublished

society. Determining the historical effectiveness of standardized tests in admissions is therefore of paramount importance. College admissions procedures and the health of affirmative action programs both hinge on reliable information about the predictability of the tests.

The "Numerical Shibboleth" ⁹

The critical question in the controversy surrounding the use of standardized tests in admissions is to what extent do the tests actually predict college success with any degree of accuracy and thus contribute to the process of selecting the most able student body. The other heavily relied upon predictor of a student's ability to succeed and graduate from an institution is the high school record, particularly class rank and high school GPA. Other ancillary factors such as leadership activities¹⁰, work habits and social adjustment¹¹ have been shown to have an impact on persistence and graduation. The ACT and SAT tests have, though, taken on an almost mythical role in the process of matching students with colleges. As was pointed out above by Sacks (1997), standardized tests have become the primary barometer - at least in the public's opinion - used to measure a student's ability to achieve in college.

For years researchers have examined the predictive ability of standardized tests and whether or not they actually reveal anything above and beyond the high school record about a student's chances of succeeding in college. Research has been somewhat

Dissertation, University of Tennessee, Knoxville, 2001.

⁸ ACT Assessment 2000 Results, Summary Report for Tennessee.

⁹ Slack & Porter (1980), p. 170.

¹⁰ Rice, N.D. & Darke, E.M. (2000). Differences between leadership and academic scholarship recipients' retention and cumulative grade point averages. *College Student Affairs Journal*, 19(2), 20-28.

¹¹ Gerdes, H. & Mallinckrodt, B. (1994). Emotional, social and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling and Development*, 72(3), 281.

ambiguous in determining how well standardized tests predict college success. Recently, a "meta-analysis" of over 1,700 individual studies by the University of Minnesota concluded that the SAT does, in fact, reliably predict students' academic performance throughout college.¹² A study of over 6,000 students from three freshmen cohorts at a large Midwestern state school found that standardized test scores and high school class rank percentile were significantly correlated with college grades and student retention.¹³

Yet, scholars have for years studied the predictive validity of standardized tests and found generally that they do not predict college success nearly as well as a student's high school record. The tests do however, seem to add slight to moderate benefits to predictive models. Crouse and Trusheim (1989)¹⁴ found high school class rank and grades correlated better with freshman grades and graduation than did SAT scores. They did note benefits from using the SAT, namely that colleges could confirm information on an applicant's high school record. In a separate piece, Crouse (1985)¹⁵ found that colleges could effectively ignore standardized test scores without substantially altering the overall accuracy of admissions decisions. The use of standardized tests would most likely affect where students attend college, not whether they do. Similar conclusions were drawn by Slack & Porter (1980)¹⁶ who found that the SAT adds little to the predictive power of college grades over the high record. They note that "the SAT is a measure of past

¹² Chronicle of Higher Education, April 27, 2001. A study, financed by the College Board, bolsters the reliability of the SAT.

¹³ House, J.D. & Xiao, B. (2001). The efficiency of high school class percentile rank and admissions test scores for the prediction of achievement outcomes. Paper presented at the Association for Institutional Research Annual Forum, Long Beach, CA, 2001.

¹⁴ Crouse, J. & Trusheim, D. (1989). How colleges can correctly determine selection benefits from the SAT. *Harvard Educational Review*, 54, 125-147.

¹⁵ Crouse, J. (1985). Does the SAT help colleges make better decisions? *Harvard Educational Review*, 55(2), 195-219.

¹⁶ Slack, W.V. & Porter, D. (1980). The scholastic aptitude test: a critical appraisal. *Harvard Educational Review*, 50(2), 154-175.

accomplishment. It is not surprising that the high school record and academic achievement tests correlate better with college performance than do scores on the SAT," (p. 169). Ting (1997)¹⁷ found that both high school rank and ACT scores were effective predictors of academic performance for specially admitted students who had been admitted to the university on probation, but that ACT scores alone were "insufficient predictors of academic success," (p. 406).

In a study of 409 students at Utah Valley State College in fall 1995, Beecher & Fischer (1999)¹⁸ found that the most powerful predictor of first year retention was high school GPA. In models that predicted completion status, using high school record alone correctly classified 65% of students, while adding other variables including ACT score improved accuracy to only 67% at best. Clearly, the use of standardized tests in this study added little to the predictive power of high school GPA. In a larger study of nearly 4,200 entering freshmen at the University of Pennsylvania in 1983 and 1984, Baron and Norman (1992)¹⁹ concluded that "all the useful predictive power of the SAT seems to be contained in the achievement tests and high school rank," (p. 1049). Though the SAT was found to have made a small contribution to prediction, it was relatively repetitive once high school record and achievement tests were known. In an analysis of nine years of data from over 15,000 students at the University of South Florida, Micceri (2001)²⁰ found that high school performance (GPA, rank) displayed a stronger relationship than test

¹⁷ Ting, S.R. (1997). Estimating academic success in the 1st year of college for specially admitted white students: a model combining cognitive and psychosocial predictors. *Journal of College Student Development*, 38(4), 401-409.

¹⁸ Beecher, M. & Fischer, L. (1999). High school courses and scores as predictors of college success. *The Journal of College Admissions*, Spring/Summer, 4-9.

¹⁹ Baron, J. & Norman, F. (1992). SATs, achievement tests, and high school class rank as predictors of college performance. *Educational and Psychological Measurement*, 52, 1047-1055.

²⁰ Micceri, T. (2001). Facts and fantasies regarding admissions standards. Paper presented at the Association for Institutional Research Annual Forum, Long Beach, CA, 2001.

scores with student outcome measures. Other studies have also concluded that the high school GPA is a more accurate predictor of college success than standardized test scores.^{21 22}

Another major component of standardized tests that has received intense study is the disparity in the predictive value of the tests across race. Affirmative action supporters are extremely interested in this debate, because a possible disparate impact that an admission procedure has on separate races has severe implications for issues of access and campus diversity. It is important to note here that alternatives to affirmative action have been proposed that focus more on socio-economic status as a basis for providing assistance in the college admissions process. While the theory of class-based affirmative action is politically more palatable than current race-based programs, it has been noted that such a strategy would not achieve the same results of increasing diversity on college campuses.²³ Weiss (1998)²⁴ observed that "even though racial and ethnic minorities are overrepresented among the socio-economically disadvantaged, class-based programs are unlikely to achieve the same ends as race-based programs," (p. 103).

Additionally, research has investigated the predictive validity of standardized tests and high school record across race, and whether or not a prediction system that subjects white and minority students to the same evaluation techniques is likely to unfairly

²¹ Dalton, S. (1976). A decline in the predictive validity of the SAT and high school achievement. *Educational and Psychological Measurement*, 36, 445-448.

²² Hedges, L.V. & Majer, K. (1976). An attempt to improve prediction of college success of minority students by adjusting for high school characteristics. *Educational and Psychological Measurement*, 36, 953-957.

²³ Cancian, M. (1998). Race-based versus class-based affirmative action in college admissions. *Journal of Policy Analysis and Management*, 17(1), 94-105.

²⁴ Weiss, J. (1998). Race-based versus class-based affirmative action in college admissions. *Journal of Policy Analysis and Management*, 17(1), 94-105.

penalize minority students. Temp (1971)²⁵ concluded that a uniform prediction system would be harmful to minorities and argued that separate prediction systems should be developed by each school for each subgroup of students. Pfeiffer and Sedlacek (1971)²⁶ agreed finding that the correlation of high school GPA with college GPA was lower for black males than for white males. Applying consistent prediction equations across race undervalued the predicted grade success for Mexican-Americans in a 1974 study at the University of California, Riverside.²⁷ In a study of the relationship between standardized tests and characteristics of minority engineering students, Fleming & Morning (1998)²⁸ found that test scores did not predict grades as consistently for minority students. Fleming & Garcia (1998)²⁹ concluded that the correlation between test scores and college success is stronger for white students than black students, and that the SAT is a better predictor for blacks attending an Historically Black College and University (HBCU) than for those attending predominantly white institutions.

Authors have noted, however, that the inaccurate prediction of college grades by standardized test scores for minority students could quite possibly assist minority students in college admissions. Jacobs (1991)³⁰ points out that standardized tests might overpredict college grades for minority students thus inadvertently assisting them in

²⁵ Temp, G. (1971). Validity of the SAT for blacks and whites in thirteen integrated institutions. *Journal of Educational Measurement*, 8(4), 245-251.

²⁶ Pfeiffer, C.M. & Sedlacek, W.E. (1971). The validity of academic predictors for black and white students at a predominantly white university. *Journal of Educational Measurement*, 8(4), 253-261.

²⁷ Goldman, R.D. & Richards, R. (1974). The SAT prediction of grades for Mexican American versus Anglo American students at the University of California, Riverside. *Journal of Educational Measurement*, 11(2), 129-135.

²⁸ Fleming, J. & Morning, C. (1998). Correlates of the SAT in Minority Engineering Students. *Journal of Higher Education*, 69(1), 89-108.

²⁹ Fleming, J.F. & Garcia, N. (1998). Are standardized tests fair to African Americans? *The Journal of Higher Education*, 69(5), 471-495.

³⁰ Jacobs, W. R. (1991). The traditional role of the SAT in the 1990s. *The Journal of College Admission*, Spring, 21-26.

admissions determinations. Similar phenomena are noted in Zwick (1995)³¹ who also argues that if eliminating standardized tests is a method for increasing ethnic diversity on campuses, that such a policy would likely not produce dramatic changes in the student body makeup due to the fact that ethnic group differences in high school GPA are similar to patterns on standardized test scores. "Dismantling admissions test requirements as a backdoor affirmative action policy cannot work," (p. 324) she notes.

Literature is clear only in the fact that certainty in the predictive power of standardized tests is elusive. Regardless of how well the popular appeal of the ACT and SAT thrives, researchers are lukewarm at best in their support for the substantial predictive ability of the tests over high school factors such as GPA and class rank. Opponents of the use of the tests in admissions procedures seem to have the weight of scholarship leaning to their side. If the ACT and SAT do not contribute much to admissions, then high school record alone could be reasonably relied upon to predict college success. Doing so would perhaps increase the level of diversity on some college campuses by not eliminating many minorities who fall short of minimum scores or whose lower average scores produce less favorable predictions when plugged into admissions formulas that utilize a standardized test score. Regardless of which criteria are used, research notes that separate admissions criteria or separate predictive models would best serve different groups of students. Given the conclusions of the scholarship, it would be prudent for colleges to investigate how different admissions models affect different segments of applicants and construct admissions procedures accordingly.

³¹ Zwick, R. (1999). Eliminating standardized tests in college admissions. *Phi Delta Kappan*, 81(4), 320-324.

Methodology

Although there has not been a lack of effort on higher education's part to study the predictability of standardized tests on college success, studies have tended to be singular institution efforts or of relatively small populations. Rarely has a longitudinal, multi-institution study been conducted to examine potential links between standardized test scores and high school GPA and retention and graduation rates. This research examined first time freshmen cohorts (which includes those students starting in the fall as well as those starting in the summer and returning in the fall) from 1987, 1989, 1991 and 1993. All six Tennessee Board of Regents schools were studied representing three levels of Carnegie classified schools across all regions of the state.

	<u>Classification</u>	<u>Region</u>
□ University of Memphis	Dr Ext.	West
□ Tennessee Technological University	MA I	East
□ Austin Peay State University	MA I	Middle
□ East Tennessee State University	Dr Int.	East
□ Middle Tennessee State University	Dr Int.	Middle
□ Tennessee State University	Dr Int.	Middle

DR Ext. - Doctoral/research universities-extensive

DR Int. - Doctoral/research universities-intensive

MA I - Master's (comprehensive) colleges and universities

Of the 31,310 freshmen at the six schools for the years studied, ACT and high school GPA data were available for 84.6% for a study population of N=26,536. College success was measured using two outcomes, first year retention and graduation. First year retention was defined as a student who appeared in any Tennessee public institution Student Information System (SIS) the following fall, including two-year institutions and the three schools of the University of Tennessee system (UT Chattanooga, UT Martin and UT Knoxville). The UT system schools were not included in the original study population

due to logistical complications). Therefore, any student who continued his or her formal education in a Tennessee public school was counted as a success. Due to limitations in the ability to gather enrollment information for students from private institutions or students who had subsequently transferred to an out of state institution, some students who were continuing their education and had met the definition of "success" were missed, an unfortunate but unavoidable shortcoming of the study. Students in the original population who chose to continue their education at a public two-year school were counted as successes, because their decision to pursue a different educational track could hardly be construed as a failure. Graduation was defined as any degree received (including a two-year degree) from any Tennessee public school (again, including the three UT schools) within the commonly accepted standard of six years. Degrees from two-year schools were included, because it would not only be tough to argue that a student who attained a degree had in some manner failed, but that in a state with such low education levels, any formal post-secondary education is a positive.³²

This study seeks to investigate the ability of high school GPA and the ACT to influence a student's quest to persist and graduate at an institution. This information should help administrators and state legislators more fully understand student retention and persistence to graduation as well as which variables are most important in the college success equation. It also contributes to the national discourse over which factor, high school GPA or ACT score, is a more accurate predictor of college success. Such information should enable administrators to construct more apt, empirically based admissions criteria that better predict first year retention and graduation.

³² According to the most recent Southern Regional Education Board data, 17.7% of adults in Tennessee have obtained a bachelor's degree compared to the national average of 24.4%.

Findings/Discussion

Table 1

	All	Black	White	St Dev.
Avg. ACT	20.83	18.23	21.52	3.97
Avg. HS GPA	2.94	2.81	2.97	0.57
Number Students	26,536	5,331	20,615	--

Table 1 shows descriptive statistics for all freshmen in the sample population at six Tennessee public schools in 1987, 1989, 1991 and 1993. Approximately 500 students were of a race other than white or black and were not included in any individual analysis. The aggregate graduation rate for the population was 42.1% while the aggregate first-year retention rate was 80.4% (See Table 2). Of those retained after the first-year, 51.2% went on to graduate within six years. Thus a student who returned for a second year of college improved his or her chances of graduating by nearly 10 percentage points.

Table 2 on the next page displays the percentage of students retained after the first year and the percentage of students who had graduated within six years by ACT score by race. This information can also be seen in Figures 1, 2, 3 & 4. The graduation rates for black students are roughly 10 percent below that for white students. The first-year retention rates are slightly higher for black students, however, than for white students. Though the reasons for this are beyond the scope of this paper, a host of factors could possibly explain this phenomenon including environmental factors, transfer rates, etc.

Table 2

ACT Score	White			Black			All students*		
	Total	Percent Ret.	Percent Grad.	Total	Percent Ret.	Percent Grad.	Total	Percent Ret.	Percent Grad.
LT 10	5	40.0%	20.0%	13	61.5%	30.8%	18	55.6%	27.8%
11	30	50.0%	16.7%	98	70.4%	12.2%	132	65.9%	12.9%
12	64	70.3%	18.8%	113	78.8%	18.6%	182	75.8%	18.7%
13	101	67.3%	17.8%	182	75.3%	16.5%	291	72.9%	17.2%
14	202	70.8%	20.8%	286	80.4%	21.3%	500	76.8%	21.0%
15	428	72.2%	25.2%	328	78.7%	27.7%	781	75.3%	26.6%
16	959	74.0%	31.0%	636	83.5%	30.7%	1,646	77.8%	31.1%
17	948	75.8%	33.1%	547	80.3%	32.5%	1,520	77.2%	32.6%
18	1,217	77.9%	34.3%	536	80.8%	36.2%	1,792	78.9%	34.9%
19	2,722	76.8%	36.7%	798	76.7%	32.7%	3,607	76.7%	35.8%
20	2,768	78.9%	39.2%	645	81.4%	40.3%	3,484	79.3%	39.5%
21	1,910	79.9%	44.3%	371	84.4%	36.9%	2,330	80.5%	43.1%
22	1,744	81.9%	47.7%	263	84.4%	42.6%	2,059	82.0%	46.9%
23	1,543	83.5%	52.4%	212	82.5%	40.1%	1,792	83.4%	50.8%
24	1,362	83.5%	52.2%	122	86.9%	39.3%	1,524	83.7%	51.2%
25	1,204	84.4%	53.8%	90	85.6%	42.2%	1,311	84.3%	52.9%
26	957	85.5%	56.5%	50	82.0%	50.0%	1,026	84.9%	55.8%
27	859	86.1%	57.9%	21	90.5%	38.1%	894	86.1%	57.3%
28	625	85.8%	60.5%	16	68.8%	43.8%	654	85.6%	60.1%
29	436	88.3%	62.8%	6	100.0%	83.3%	449	88.4%	63.0%
30	291	85.6%	56.0%	2	100.0%	100.0%	298	85.2%	56.4%
31	132	87.9%	62.9%	2	100.0%	50.0%	138	88.4%	62.3%
32	78	89.7%	66.7%	0	NA	NA	81	90.1%	67.9%
33	38	94.7%	71.1%	0	NA	NA	38	94.7%	71.1%
34	5	100.0%	80.0%	0	NA	NA	5	100.0%	80.0%
35	1	100.0%	100.0%	0	NA	NA	1	100.0%	100.0%
36	0	NA	NA	0	NA	NA	0	NA	NA
Total	20,615	80.4%	44.4%	5,331	80.7%	33.3%	26,536	80.4%	42.1%

*Includes non-black and non-white students.

(All students, graduation) $\chi^2=1105.9$; (All students, retention) $\chi^2=190.6$

Table 3 displays the percentage of students retained after the first year and the percentage of students who had graduated within six years by GPA category by race (GPA groupings were set at a fifth of a point range for convenience of analysis). This information can also be seen in Figures 5, 6, 7 & 8.

Table 3

HS	White			Black			All Students*		
GPA	Total	Percent Ret.	Percent Grad.	Total	Percent Ret.	Percent Grad.	Total	Percent Ret.	Percent Grad.
0-1.00	6	83.3%	33.3%	0	NA	NA	6	83.3%	33.3%
1.01-1.20	8	62.5%	0.0%	6	50.0%	0.0%	14	57.1%	0.0%
1.21-1.40	37	51.4%	2.7%	16	50.0%	6.3%	55	50.9%	3.6%
1.41-1.60	112	54.5%	9.8%	38	63.2%	7.9%	156	55.8%	9.0%
1.61-1.80	237	64.6%	9.7%	68	57.4%	11.8%	311	63.0%	10.0%
1.81-2.00	569	66.1%	14.9%	188	71.8%	13.8%	771	67.3%	14.4%
2.01-2.20	1,101	69.8%	20.3%	386	73.8%	13.7%	1,521	70.6%	18.5%
2.21-2.40	1,677	71.7%	23.8%	586	76.3%	19.8%	2,314	72.8%	22.8%
2.41-2.60	2,071	76.0%	29.2%	691	79.2%	28.2%	2,807	76.6%	28.9%
2.61-2.80	2,405	78.0%	35.1%	721	78.9%	30.2%	3,191	78.2%	33.8%
2.81-3.00	2,552	80.1%	42.5%	732	81.7%	36.3%	3,355	80.3%	41.1%
3.01-3.20	2,584	81.8%	48.0%	664	85.2%	39.6%	3,309	82.4%	46.2%
3.21-3.40	2,242	84.3%	53.3%	480	84.6%	42.5%	2,799	84.3%	51.3%
3.41-3.60	1,983	86.4%	63.2%	348	87.1%	51.1%	2,384	86.6%	61.1%
3.61-3.80	1,494	90.7%	68.0%	228	89.9%	59.6%	1,769	90.5%	66.6%
3.81-4.0	1,551	92.1%	76.4%	185	91.9%	58.4%	1,791	92.2%	74.7%
Total	20,615	80.4%	44.4%	5,331	80.7%	33.3%	26,536	80.4%	42.1%

*Includes non black and non white students.

(All students, graduation) $\chi^2=2975.9$; (All students, retention) $\chi^2=768.4$

Tennessee colleges and universities could likely predict graduation and first-year retention just as accurately from high school GPA as from a combination of the ACT test and the high school record. As the literature suggested, the ACT is clearly correlated to measurements of college success, but it actually adds little to the predictive power of high school GPA alone. Therefore, it is possible that admissions procedures could continue to function without the ACT tests and maintain a significantly similar student body.

If, for instance, a college wanted to admit a student who had an even chance of graduating (50%), then the college could set an ACT score cutoff of 22-23 for white students or a GPA of approximately a 3.2. However, if the college wanted the same chances of success for a black student, the benchmark would need to be a 26 ACT or

approximately a 3.4 GPA. This appears to contradict the assertions by Zwick & Jacobs that admissions equations might overpredict success for black students thereby assisting them in the admissions process. If admissions officials wanted to only admit students who had a certain chance of graduating, it would likely have to raise minimum requirements for black students.

As seen in the chi-squared values underneath Tables 2 & 3, the college success input variables, ACT and high school GPA, are significantly associated with retention and graduation. Additionally, both outcome measures, retention and graduation, are significantly associated with each other ($\chi^2=3668.1$). Table 4 summarizes the chi-squared values from Tables 2 & 3 on previous pages (for instance the chi-squared value for ACT on graduation is 1105.9).

Table 4

Chi-Squared Values		
	Retention	Graduation
ACT	190.6	1105.9
GPA	768.4	2975.9

df=1; p<.001

Logit modeling was performed on the input variables of ACT score and high school GPA to examine their predictive efficacy, which refers to the ability to generate accurate predictions of a result based on a dependent variable. The dependent variables in the analyses, retention and graduation, are dichotomous dependent variables, meaning they are coded as successful = “1” and not successful = “0”, and therefore require the use of logit modeling rather than regression modeling. Logit analysis acts as a regression-like statistical technique in which a dichotomous dependent variable is analyzed to examine

the effect certain factors have on whether or not an event occurs (did students graduate or not and were they retained after one year or not). This allows us to test for how significantly each variable in the model (ACT score and GPA) affects the dependent variable³³. For ease of analysis, high school GPAs were recoded into half point categories (4.0-3.51; 3.50-3.01; etc.) and ACT scores were recoded into 3-point score groupings (16-18; 19-21; etc.).

Table 5

Outcome: Graduation	All Students				
	B	S.E.	Wald	df	Sig.
GPA	0.600	0.014	1880.594	1	0.00
ACT	0.112	0.011	98.213	1	3.76E-23
Constant	-3.931	0.071	3077.340	1	0.00

R²=0.152**

Table 6

Outcome: Graduation	Black Students				
	B	S.E.	Wald	df	Sig.
GPA	0.519	0.032	270.591	1	0.00
ACT	0.080	0.031	6.766	1	9.29E-03
Constant	-3.595	0.160	503.757	1	0.00E+00

R²=0.097**

Table 7

Outcome: Graduation	White Students				
	B	S.E.	Wald	df	Sig.
GPA	0.626	0.016	1583.597	1	0.00
ACT	0.086	0.013	42.823	1	5.99E-11
Constant	-3.934	0.081	2372.537	1	0.00E+00

R²=0.157**

³³ Demaris, A. (1992). Logit Modeling – Practical Applications. Newberry Park, CA: Sage Publications.

Table 8

Outcome: Retention		All Students			
	B	S.E.	Wald	df	Sig.
GPA	0.361	0.015	566.481	1	0.00
ACT	0.030	0.014	4.900	1	2.69E-02
Constant	-0.557	0.073	58.403	1	2.14E-14

R²=0.045**

Table 9

Outcome: Retention		Black Students			
	B	S.E.	Wald	df	Sig.
GPA	0.356	0.035	105.317	1	0.00
ACT	-0.040	0.036	1.253	1	2.63E-01
Constant	-0.242	0.166	2.120	1	1.45E-01

R²=0.034**

Table 10

Outcome: Graduation		White Students			
	B	S.E.	Wald	df	Sig.
GPA	0.352	0.017	420.475	1	0.00
ACT	0.071	0.016	19.761	1	8.78E-06
Constant	-0.675	0.084	65.195	1	6.79E-16

R²=0.049**

When the effects of both variables are analyzed on the outcome measure of graduation, as seen in Table 5, it is revealed that GPA has a much greater impact on graduation than ACT score (B=0.600 for GPA and B=0.112 for ACT). Also, as seen in Table 6, GPA had a much greater impact on retention than ACT score (B=0.361 for GPA; B=0.030 for ACT score). The same result was found in Tables 6, 7, 9 and 10 that

examined the impact of HS GPA and ACT score by race. These findings are consistent with previous findings that high school record has a greater impact on college success outcomes than ACT score.

The following tables show a cross tab display of graduation and retention rates for students in certain GPA and ACT score ranges. Cells in italics denote fewer than 50 students, which could be misleading due to of the small number of students.

Table 11
Graduation Rates by ACT Score and GPA

ACT Score	GPA Range						
	0-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00
15 & below	<i>NA</i>	<i>3.1%</i>	8.1%	19.5%	27.2%	29.4%	22.2%
16-18	<i>0.0%</i>	8.8%	12.8%	23.3%	36.4%	41.7%	53.6%
19-21	<i>66.7%</i>	<i>6.5%</i>	13.1%	23.0%	37.2%	50.7%	64.6%
22-24	<i>NA</i>	<i>16.7%</i>	17.6%	23.5%	39.2%	56.3%	67.7%
25-27	<i>0.0%</i>	<i>0.0%</i>	<i>6.7%</i>	23.1%	34.3%	52.9%	73.8%
28-30	<i>NA</i>	<i>0.0%</i>	<i>14.3%</i>	<i>28.6%</i>	38.5%	51.1%	71.9%
31-36	<i>NA</i>	<i>NA</i>	<i>0.0%</i>	<i>0.0%</i>	22.2%	46.3%	73.7%

Table 12
Retention Rates by ACT Score and GPA

ACT Score	GPA Range						
	0-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00
15 & below	<i>NA</i>	<i>56.3%</i>	59.3%	65.3%	79.6%	79.6%	85.2%
16-18	<i>100.0%</i>	<i>61.8%</i>	66.8%	73.9%	79.6%	83.1%	83.5%
19-21	<i>66.7%</i>	<i>43.5%</i>	66.2%	73.2%	78.6%	82.9%	87.4%
22-24	<i>NA</i>	<i>66.7%</i>	69.3%	71.9%	78.9%	85.4%	91.2%
25-27	<i>100.0%</i>	<i>0.0%</i>	<i>55.3%</i>	74.4%	77.9%	84.5%	91.7%
28-30	<i>NA</i>	<i>0.0%</i>	<i>71.4%</i>	<i>70.2%</i>	72.8%	82.9%	92.4%
31-36	<i>NA</i>	<i>NA</i>	<i>0.0%</i>	<i>100.0%</i>	88.9%	75.9%	94.4%

Implications

Tennessee public higher education has been forced to wrestle with the question of how best to determine whom to admit into its colleges and universities. Through the force of the federal courts via the *Geier* desegregation lawsuit, Tennessee has had to confront how best to balance properly diversity, meritocracy and higher education's proper level of social responsibility to the citizens of Tennessee. Public higher education has been used as an effective method of ensuring and redistributing social and economic opportunity to many Americans. Education has always served as a primary mechanism for improving quality of life and socio-economic status. That it is used as a vehicle for social justice is surprising only to the unobservant. The responsibility higher education has to the public and to society is very much a part of its mission and its historical use.

At the same time, Tennessee colleges and universities have sought to improve their educational quality by attempting to matriculate higher quality freshmen classes as measured by, most notably, standardized test scores. However, standardized tests have come under great attack, as opponents argue that the tests are not only biased against minorities, but that they do not accurately predict a student's aptitude. That the tests measure some basic form of aptitude seems to be a rather defensible position. Establishing whether or not the tests are discriminatory due solely to the disparate impact the tests have on different races is a spurious conclusion. Too often, though, higher education has neglected to examine the validity of such tests to determine whether or not they actually correlate or are associated strongly with relevant college success outcomes. The use of standardized tests as a basis for making admissions determinations seems dubious in light of the weight of the scholarship on the validity of the tests in predicting

college success outcomes. The present analysis of Tennessee data concurs with that position.

Having the courage to implement new admissions procedures that focus on high school record in lieu of standardized test scores could appeal to those who wish to see greater diversity on college campuses. The discontinued use of the SAT or ACT as a significant predictor in admissions procedures would respond to assertions that minorities are unfairly denied higher education opportunities due to discriminatory admissions practices. Because the high school record appears to correspond adequately to college success outcomes without needing the predictive assistance of standardized tests, the decision to not utilize the ACT or SAT in admissions procedures would not seem to violate notions of meritocracy, therefore allowing college administration officials to balance and satisfy the principles of diversity and meritocracy.

Public higher education exists to enhance the lives of citizens and strengthen the social, civic and economic fabric of the state. Neglecting the real and obvious social necessity to improve the lives of historically under-served populations is institutional malfeasance. The social responsibility to do right by all its citizens while pursuing the depths and majesties of advanced knowledge is public higher education's reason for being. In the last few years, the public and therefore higher education administrators have become recklessly enamored with standardized test scores as the primary indicator of student aptitude without stopping to question whether or not proper focus had erroneously shifted away from the appropriate variables for predicting college success. Studies such as this add to the body of literature that has concluded that though the ACT is associated with measures of college success, it adds very little to the predictive value of

the high school record. In light of public higher education's responsibility to diversity and social responsibility, it seems prudent that the ACT should at the very least be de-emphasized in the admissions process.

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